Brexit and Everything But Arms (EBA) Countries: Losing Preferences

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Preliminary results, please do not cite

Following the decision of the British folk on June 23rd, 2016, UK is going to exit the European Union (EU). According to the statements of Theresa May – the Prime Minister of the United Kingdom (UK) – Great Britain will leave the single market and customs union after the recently negotiated transition period, which will last from March 2019 to December 2020.

Since a detailed Brexit deal still has to be negotiated by the two partners, there are different scenarios suggested in the literature including UK's participation in (i) the EU customs union or single market, (ii) European Free Trade Association (EFTA) as Norway or (iii) a deep free trade agreement such as Comprehensive Economic and Trade Agreement (CETA) which is an alternative to the Swiss scenario with a far-reaching set of bilateral agreements.

Previous research indicates that Brexit will be strongly harmful for the British economy and for the EU. The majority of studies illustrates an asymmetric negative effect with higher losses for the UK compared to the EU due to the stronger dependence of Great Britain on trade with the EU. In particular, according to Dhingra et al. (2017), Brexit will reduce welfare in the UK by up to -2.7% while the welfare loss of the EU-27 amounts only to -0.35%. A similar picture is provided by Latorre et. al. (2018b), where welfare losses for the UK and EU-27 reach -3.17% and -0.59% in case of hard Brexit scenario (WTO rules), respectively. Generally, GDP losses from a hard Brexit range from -1 to -4% in the UK and from -0.1 to -0.6% in the EU-27 across quantitative studies. If macro shocks (e.g., uncertainty, exchange rate), unemployment and out-migration are additionally included in the macro models, the GDP loss of the UK increases up to -8% (see Lattore et al., 2018a).

The most existing studies focus on the effects of Brexit on the UK and the EU. There is only a couple of papers where other countries or regions are included (see, e.g., Dhingra et al., 2017, Latorre et. al., 2018b and Ciuriak et al., 2015). However, these studies do not account for any changes in the British trade policy against third countries within the Brexit simulations and thus suggest small gains due to trade diversion towards them. For instance, Ciuriak et al. (2015) suggest a GDP increase by approximately 0.4% for Canada, Japan and Russia in 2030, while Latorre et. al. (2018b) find a largest GDP increase for the Middle-East and North Africa region with 0.6%. Though, the assumption of unchanged trade policy in UK against the rest of the world is very unrealistic since Great Britain needs to invent an entirely new trade policy: negotiate its national terms of access for the WTO membership and renegotiate all the 81 existent EU free trade agreements (FTAs), or even more if one takes pending and currently negotiated FTAs into account.[1]

The impact on developing and emerging countries remains largely unconsidered in the literature. However, without any additional action of the British government, Brexit will result in the re-imposition of duties on imports from 116 developing countries currently benefiting from preferential market access to the UK under different European treaties. In total, these countries constitute an average annual value of imports into the UK of £43 billion or £34 billion between 2013 and 2015 with clothing and textiles as the most significant sectors accounting for around 37% of the total value of imports (see Grady, 2017). Stevens and Kennan (2016) illustrate that the Commonwealth developing countries will face a potential tariff hike equivalent to approximately €715 million with Bangladesh, Seychelles and Mauritius as the most affected countries. Moreover, according to Mendez-Parra et al. (2016a, p. 13), the world's poorest countries could lose more than €385 million a year if preferences under the EU's Generalized Scheme of Preferences (GSP) and Everything But Arms (EBA) treaty will not be maintained. Arun et al. (2017) simulate an increase of all UK tariffs to the current MFN tariff rates applied by the EU using a single market partial equilibrium model with the focus on Least Developed Countries (LDCs) of the Asia-Pacific region. They suggest that these countries might experience a decrease of their exports to the UK at the range of 30% to 50% in key sectors such as fishing, clothes, textiles and footwear. Moreover, they identify that especially Bangladesh, Cambodia, Lao PDR, Myanmar and Nepal will suffer from potential trade disruptions. Apart from potentially increased tariffs, Mendez-Parra et al. (2016b) suggest that devaluation of the pound and lower UK growth will reduce exports of all LDCs by 0.6% or $500 million in the short term with Bangladesh, Kenya, Mauritius and Fiji as the most affected countries.

This study contributes to the literature by providing the first detailed quantitative evaluation of Brexit impact on the 49 Least Developed Countries (LDCs) that are sensitive to the changes on the world markets and currently enjoy the best preferential treatment under the EBA treaty (duty-free and quota free treatment for all LDCs covering 99% of all products). Although these countries account for only 1.15% of UK's imports, the share of their exports to UK exceeds 35% in wearing apparel, 21% in textiles and 9% in sugar. Comparing the average export shares of individual EBA countries over 2013-2015, the strongest trade links to UK exist in Solomon Islands (13.3%), Cambodia (9.6%), Gambia (5.9%) and Malawi (5.4%).[2]

To investigate the direct effect of the lost preferences under the EBA treaty as well as the indirect effects of UK's withdrawal from the EU on the LDCs, we apply an innovative multi-region and multi-sector general-equilibrium simulation model incorporating heterogeneous firms and FDI in services (following the Brexit analysis of Latorre et. al., 2018b). Along the traditional modeling framework with constant returns to scale technologies and regionally

[1] The list of the EU FTAs is available at http://ec.europa.eu/trade/policy/countries-and-regions/negotiations-and-agreements/

[2] Own calculations based on Comtrade data for 2013-2015, not all EBA countries are included due to data availability or zero trade flows.

differentiated goods (Armington [1969] assumption) in perfect competition sectors, we implement a competitive selection model of heterogeneous firms consistent with Melitz [2003] in manufacturing sectors with imperfect competition. Moreover, for imperfectly competitive services sectors we allow for the presence of multinational firms supplying business services directly in the host country (following the literature of FDI in business services, see, e.g., Tarr, 2013). This means that while in manufacturing foreign firms supply their destination markets only on a cross-border basis, business services can be supplied by foreign firms both operating in the host country (FDI case) and abroad (cross-border supply).

To capture the indirect effects of Brexit we incorporate two different Brexit scenarios: *hard* and *soft* Brexit (following Latorre et. al., 2018b, Ottaviano et al., 2014, and Dhingra et al., 2017). In case of hard Brexit we increase import tariffs between the EU and UK to the trade weighted average MFN level calculated using the external tariff rates of the EU and UK's bilateral trade flows with the rest of the EU. Moreover, UK and EU will face increased NTBs equivalent to 1/2 of the NTMs faced by the US on the EU markets. We also assume an increase of existent FDI barriers between UK and the rest of the EU (available from Jafari and Tarr, 2014) by 1/2. In case of soft Brexit we remain zero import tariffs, but increase the NTBs and FDI barriers by 1/4.

Simulating the loss of preferences on the UK market for the EBA countries, we conduct two different simulations: First, we increase UK's import tariffs to the trade weighted average MFN level calculated using the external tariff rates of the EU and UK's imports from non-EU countries. Second, due to expected changes in UK's importing procedures and potentially higher NTBs even against the rest of European countries, we additionally increase the NTBs that EBA countries face in UK to the same level as for the rest of the EU.

In addition to the CGE analysis, we conduct a set of microsimulations using the Global Income Distribution Dynamics (GIDD) model – the first global macro-micro simulation tool which combines a set of price and volume changes from a global CGE with household surveys at the global level (see, e.g., Bussolo et al., 2010, Balistreri et al., 2015). This provides the detailed results for poverty and shared prosperity for included LDCs in case of hard and soft Brexit.

Our preliminary results also indicate the aforementioned asymmetric result: while the EU loses up to 0.56% in terms of welfare, UK suffers much stronger with the highest welfare loss of 3.30% in case of hard Brexit. Regarding the EBA countries, we observe negative effects in terms of GDP and welfare. In hard Brexit scenario with higher tariffs against EBA countries, the increased trade barriers between the EU and UK seem to divert trade flows to other destinations and allow even for increased exports in Burkina Faso, Malawi and Mozambique. These small positive effects disappear when we include an increase in UK's NTBs against the EBA countries. While changes in total exports are relatively limited with a maximum of -1.7% in Cambodia, the exports to the UK decline strongly with the values over 60% in Burkina Faso, Malawi and Zambia. Therefore, all separately included EBA countries suffer from the loss of preferences in UK and Brexit with the highest welfare change of -1.39% in Cambodia. Our sectoral analysis suggests that food processing, textiles and other transport are the most affected sectors across all EBA countries. The micro-simulations suggest a considerable increase in the share of population under the poverty line even for countries with very small negative aggregate effects.

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Figure 1: Share of countries' exports to UK

Source for calculations: Comtrade, HS07, average over 2013-2015

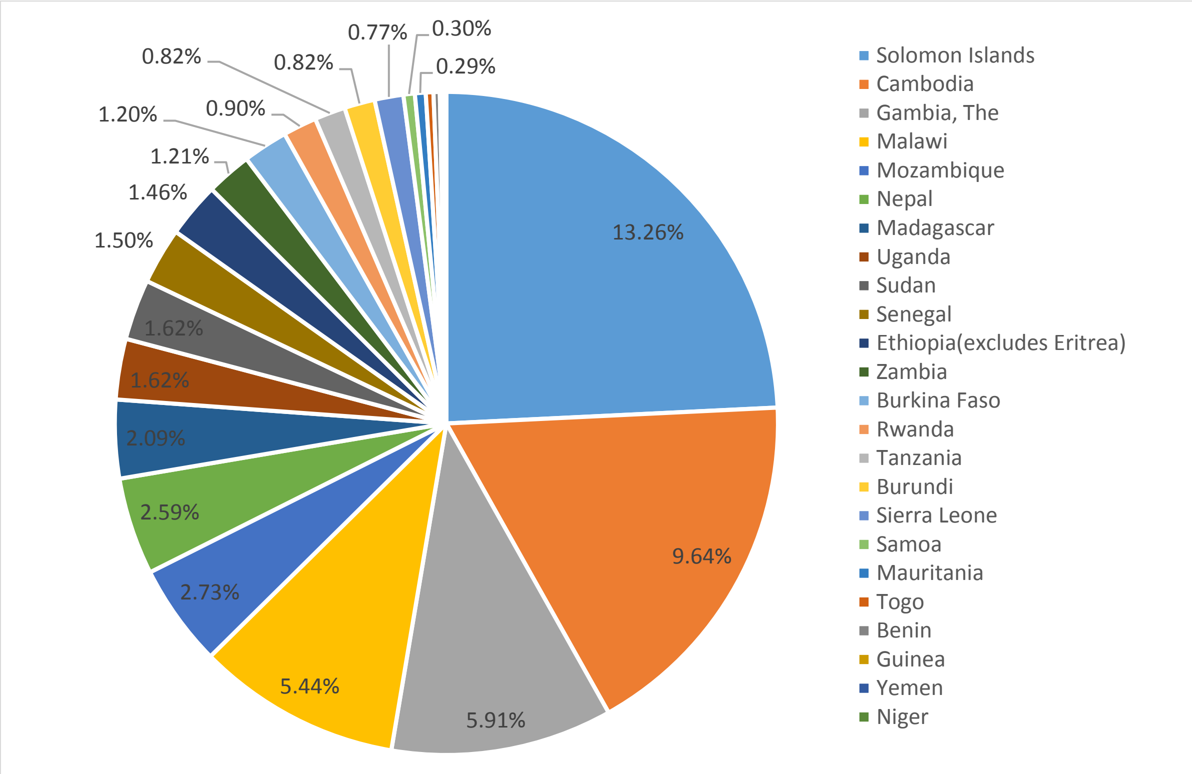

Table 1: Aggregation of countries

Country		Corresponding GTAP countries and regions	
GBR	Great Britain	GBR	Great Britain
USA	United States of America	USA	United States of America
EUR	EU-27	All EU countries except the UK	
CHN	China	CHN	China
ROW	Rest of the world	All other countries and regions included in GTAP	
EBA	Rest of EBA countries	XAC	South Central Africa: Angola, Congo (the Democratic Republic of)
		XSA	Rest of South Asia: Afghanistan, Bhutan, Maldives
		XSE	Rest of Southeast Asia: Myanmar, Timor Leste
		XEC	Rest of Eastern Africa: Burundi, Comoros, Djibouti, Eritrea, Mayotte, Seychelles, Somalia, Sudan
		XCF	Central Africa: Central African Republic, Chad, Congo, Equatorial Guinea, Gabon, Sao Tome and Principe
		XWF	Rest of Western Africa: Cape Verde, Gambia, Guinea, Liberia, Mali, Mauritania, Niger, Saint Helena, Ascension and Tristan da Cunha, Sierra Leone
		XSC	Rest of South African Customs Union: Lesotho, Swaziland
		BGD	Bangladesh
		BEN	Benin
		GIN	Guinea
		LAO	Laos
		RWA	Rwanda
		TZA	Tanzania
		TGO	Togo
Separately included EBA countries			
KHM	Cambodia	KHM	Cambodia
MWI	Malawi	MWI	Malawi
MOZ	Mozambigue	MOZ	Mozambigue
NPL	Nepal	NPL	Nepal
MDG	Madagascar	MDG	Madagascar
UGA	Uganda	UGA	Uganda
SEN	Senegal	SEN	Senegal
ETH	Ethiopia	ETH	Ethiopia
ZMB	Zambia	ZMB	Zambia
BFA	Burkina Faso	BFA	Burkina Faso

Table 2: Assumptions for all simulations

Barrier	Assumptions for EBA countries		Brexit (assumptions for UK and EU)	
	Tariffs only	**Tariffs and NTBs**	**Soft**	**Hard**
Tariffs	Increase to the EU's MFN level	Increase to the EU's MFN level	Zero tariffs	Increase to the level of the EU's MFN weighted tariffs
NTBs		Increase to the same level as against the EU countries in Brexit simulations	Increase by 25% of EU's NTBs against the US imports	Increase by 50% of EU's NTBs against the US imports
FDI barriers			Increase by 25% of initial barriers in the UK and EU-27	Increase by 50% of initial barriers in the UK and EU-27

Table 3: Assumed trade barriers in the simulations, percent

	Sectors	MFN Tariffs			NTBs to trade		NTBs to FDI			
		Hard Brexit		In UK against	Soft Brexit	Hard Brexit	Soft Brexit		Hard Brexit	
		In EU-27	In UK against the EU-27	EBA countries	Both in EU-27 and UK		In EU-27	In UK	In EU-27	In UK
CRTS sectors	Agriculture	10.2	10.8	7.2	14.2	28.4				
	Other primary	0.0	0.1	0.0	14.2	28.4				
	Wood and paper	0.5	1.0	0.6	2.8	5.7				
	Personal services				1.1	2.2				
	Other services				1.1	2.2				
IRTS sectors with Melitz structure	Food	19.8	22.0	21.6	14.2	28.4				
	Textiles	10.0	9.5	10.6	4.8	9.6				
	Chemicals	2.8	2.7	2.6	3.4	6.8				
	Metals	1.9	2.0	1.0	3.0	6.0				
	Motor vehicles	8.0	8.8	7.8	6.4	12.8				
	Other transport	1.7	1.6	1.5	4.7	9.4				
	Electronics	0.9	1.5	1.0	3.2	6.4				
	Other machinery	1.7	1.8	1.9	0.0	0.0				
	Other manufactures	2.6	2.2	1.8	2.8	5.7				
	Construction				1.2	2.3				
IRTS services with multinationas	Water transport				2.0	4.0	2.8	0.0	5.6	0.0
	Air transport				0.5	1.0	4.6	4.7	9.1	9.3
	Communications				2.9	5.9	0.2	0.2	0.5	0.4
	Finance				2.8	5.7	0.5	0.6	0.9	1.1
	Insurance				2.7	5.4	2.7	2.8	5.5	5.6
	Business services				3.7	7.5	7.9	4.8	15.8	9.7

Source: for the NTBs Ecorys (2009), Latorre and Yonezawa (2018) and Latorre et al. (2018); TRAINS and WITS for tariffs and Jafari and Tarr (2017) and Koske et al., (2015) for barriers to FDI.

Table 4: Aggregate trade, percentage change compared to benchmark

Country/ Region	Exports				Imports			
	Increase of tariffs		Increase of tariffs & NTBs		Increase of tariffs		Increase of tariffs & NTBs	
	Soft Brexit	Hard Brexit	Soft Brexit	Hard Brexit	Soft Brexit	Hard Brexit	Soft Brexit	Hard Brexit
	to all countries				from all countries			
EU-27	-1.74	-3.97	-1.74	-3.97	-1.70	-3.87	-1.69	-3.86
Great Britain	-8.00	-17.90	-8.05	-17.98	-6.72	-15.00	-6.76	-15.08
USA	0.05	0.14	0.05	0.15	0.04	0.10	0.04	0.10
China	0.01	0.05	0.01	0.05	0.02	0.07	0.02	0.07
Burkina Faso	0.05	0.10	0.02	0.05	0.06	0.13	-0.01	0.03
Rest of EBA	-0.17	-0.10	-0.28	-0.29	-0.12	-0.07	-0.20	-0.20
Ethiopia	-0.09	-0.01	-0.26	-0.34	-0.01	0.04	-0.05	-0.05
Cambodia	-0.60	-0.56	-1.57	-1.70	-0.53	-0.49	-1.40	-1.49
Madagascar	-0.19	-0.19	-0.29	-0.37	-0.16	-0.15	-0.24	-0.29
Mozambique	0.00	0.01	-0.07	-0.13	0.01	0.01	-0.02	-0.05
Malawi	-0.01	0.06	-0.27	-0.35	-0.02	0.02	-0.13	-0.15
Nepal	-0.39	-0.41	-0.58	-0.77	-0.07	-0.07	-0.11	-0.13
ROW	0.17	0.36	0.17	0.36	0.21	0.42	0.21	0.42
Senegal	-0.10	-0.03	-0.33	-0.44	0.01	0.06	-0.05	-0.03
Uganda	0.02	0.03	-0.05	-0.07	0.02	0.03	-0.03	-0.04
Zambia	0.06	0.08	0.05	0.08	0.03	0.03	-0.02	-0.02
	to UK				from UK			
EU-27	-14.93	-35.00	-14.88	-34.95	-16.94	-36.03	-16.99	-36.09
USA	1.41	4.98	1.46	5.06	0.95	0.45	0.90	0.36
China	2.60	8.09	2.75	8.42	0.43	-0.17	0.39	-0.26
Burkina Faso	-8.52	0.38	-51.22	-64.70	-0.66	-3.14	-0.88	-3.50
Rest of EBA	-28.14	-25.41	-48.56	-56.61	0.60	-0.02	0.48	-0.23
Ethiopia	-6.69	-0.61	-17.03	-20.29	0.18	-0.65	-0.07	-1.10
Cambodia	-33.65	-30.35	-47.30	-53.19	-0.59	-1.60	-1.82	-3.08
Madagascar	-20.16	-17.33	-36.40	-42.64	5.39	4.74	5.27	4.50
Mozambique	-3.94	0.89	-17.28	-24.81	0.41	-0.32	0.31	-0.52
Malawi	-4.26	6.16	-53.53	-68.93	0.51	0.01	0.18	-0.56
Nepal	-14.70	-12.98	-22.81	-28.38	0.27	-0.73	0.17	-0.94
ROW	2.42	7.15	2.65	7.52	1.46	1.19	1.42	1.09
Senegal	-8.57	-3.17	-26.31	-34.00	0.86	0.45	0.69	0.17
Uganda	-6.10	-1.96	-26.27	-34.44	0.42	-0.32	0.28	-0.58
Zambia	-12.01	-6.44	-48.33	-62.97	1.46	0.68	1.32	0.44

Table 5: Real GDP and welfare (Hicks equivalent variation), percentage change compared to benchmark

Country/ Region	Increase of tariffs		Increase of tariffs & NTBs	
	Soft Brexit	Hard Brexit	Soft Brexit	Hard Brexit
	Real GDP			
EU-27	-0.16	-0.35	-0.16	-0.35
Great Britain	-1.29	-2.65	-1.30	-2.67
USA	0.01	0.01	0.01	0.01
China	0.00	0.00	0.00	0.00
Burkina Faso	0.02	0.03	0.02	0.03
Rest of EBA	-0.01	0.00	-0.03	-0.03
Ethiopia	-0.01	-0.01	-0.02	-0.04
Cambodia	-0.53	-0.51	-0.98	-1.08
Madagascar	-0.02	-0.01	-0.04	-0.04
Mozambique	-0.01	-0.01	-0.03	-0.06
Malawi	-0.03	0.00	-0.11	-0.14
Nepal	-0.02	-0.03	-0.04	-0.06
ROW	0.01	0.03	0.01	0.03
Senegal	-0.01	0.00	-0.05	-0.06
Uganda	0.00	0.00	-0.02	-0.03
Zambia	0.01	0.01	0.02	0.03
	Welfare			
EU-27	-0.26	-0.56	-0.26	-0.56
Great Britain	-1.60	-3.27	-1.61	-3.30
USA	0.01	0.02	0.01	0.02
China	-0.01	0.01	-0.01	0.01
Burkina Faso	0.01	0.04	-0.02	-0.01
Rest of EBA	-0.03	-0.01	-0.06	-0.05
Ethiopia	-0.01	0.01	-0.02	-0.03
Cambodia	-0.64	-0.61	-1.27	-1.39
Madagascar	-0.03	-0.02	-0.05	-0.06
Mozambique	0.00	0.01	-0.04	-0.07
Malawi	-0.05	-0.01	-0.14	-0.17
Nepal	-0.01	-0.01	-0.02	-0.03
ROW	0.02	0.05	0.02	0.05
Senegal	0.01	0.04	-0.01	0.01
Uganda	0.00	0.00	-0.04	-0.06
Zambia	-0.02	-0.01	-0.03	-0.03

Table 6: Factor remuneration, percentage change compared to benchmark

Country/ Region	Increase of tariffs		Increase of tariffs & NTBs	
	Soft Brexit	Hard Brexit	Soft Brexit	Hard Brexit
	Labor			
EU-27	-0.20	-0.44	-0.20	-0.44
Great Britain	-1.18	-2.66	-1.19	-2.68
USA	0.00	0.01	0.00	0.01
China	0.00	0.01	0.00	0.01
Burkina Faso	-0.06	0.02	-0.19	-0.23
Rest of EBA	-0.01	0.01	-0.04	-0.03
Ethiopia	-0.02	0.00	-0.06	-0.09
Cambodia	-0.35	-0.33	-0.71	-0.79
Madagascar	-0.02	-0.02	-0.04	-0.05
Mozambique	-0.02	0.00	-0.09	-0.12
Malawi	-0.10	-0.01	-0.27	-0.35
Nepal	-0.01	-0.01	-0.02	-0.03
ROW	0.01	0.03	0.01	0.03
Senegal	-0.10	0.01	-0.30	-0.39
Uganda	-0.05	-0.01	-0.17	-0.23
Zambia	-0.02	0.00	-0.08	-0.11
	Capital			
EU-27	-0.22	-0.45	-0.22	-0.45
Great Britain	-1.86	-3.79	-1.87	-3.81
USA	0.00	0.01	0.00	0.01
China	-0.02	-0.02	-0.02	-0.02
Burkina Faso	0.02	0.01	0.07	0.09
Rest of EBA	-0.11	-0.11	-0.13	-0.15
Ethiopia	-0.01	-0.02	0.00	-0.01
Cambodia	-0.79	-0.76	-1.25	-1.41
Madagascar	-0.07	-0.08	-0.09	-0.11
Mozambique	-0.02	-0.04	-0.06	-0.12
Malawi	-0.08	-0.08	-0.12	-0.14
Nepal	-0.03	-0.04	-0.05	-0.07
ROW	0.00	0.02	0.00	0.02
Senegal	0.01	-0.01	0.04	0.04
Uganda	0.00	-0.01	0.01	0.01
Zambia	0.04	0.03	0.14	0.20

Table 7: Sectoral results for all EBA countries, percentage change compared to benchmark

Sector		Output				Aggregate exports				Exports to UK			
		Tariffs		Tariffs & NTBs		Tariffs		Tariffs & NTBs		Tariffs		Tariffs & NTBs	
		Soft Brexit	Hard Brexit	Soft Brexit	Hard Brexit	Soft Brexit	Hard Brexit	Soft Brexit	Hard Brexit	Soft Brexit	Hard Brexit	Soft Brexit	Hard Brexit
CRTS sectors	Agriculture	-0.05	-0.02	-0.10	-0.12	-0.01	0.21	-0.33	-0.45	-16.38	0.51	-49.85	-63.00
	Other primary	0.39	0.47	0.38	0.52	0.43	0.52	0.41	0.56	30.71	28.04	-68.25	-91.85
	Wood and paper	0.04	0.00	0.07	0.05	0.24	0.11	0.34	0.21	7.05	14.42	-7.50	-14.51
	Personal services	0.00	0.01	-0.02	-0.03	0.26	-0.04	0.62	0.33	-0.30	-0.67	-3.13	-6.57
	Other services	0.00	-0.01	-0.01	-0.02	0.04	-0.17	0.15	-0.05	-0.70	-1.05	-3.97	-7.57
IRTS sectors with Melitz structure	Food	-0.11	-0.13	-0.11	-0.14	-2.98	-3.14	-3.53	-4.14	-64.22	-57.71	-81.54	-88.35
	Textiles	-0.88	-0.87	-0.99	-1.13	-2.16	-2.17	-2.53	-2.93	-45.97	-42.78	-56.79	-63.27
	Chemicals	0.11	0.16	0.19	0.28	0.25	0.44	0.27	0.39	-3.51	1.86	-18.74	-27.63
	Metals	0.07	0.07	0.14	0.18	0.09	0.11	0.16	0.22	-1.33	3.06	-14.88	-23.19
	Motor vehicles	0.15	0.34	0.15	0.37	0.03	1.04	-0.28	0.19	-19.48	11.62	-41.38	-40.39
	Other transport	0.07	0.13	-2.96	-2.93	0.02	0.16	-4.84	-4.95	-5.14	-2.45	-51.95	-60.65
	Electronics	0.11	0.13	0.16	0.22	0.42	0.71	0.16	0.14	6.81	13.98	-9.23	-17.56
	Other machinery	0.02	-0.05	0.09	0.08	0.18	0.17	0.28	0.35	6.63	9.25	6.73	9.43
	Other manufactures	0.06	0.04	0.11	0.13	0.14	0.16	0.17	0.18	0.39	2.06	-12.75	-22.82
	Construction	0.02	-0.02	0.04	0.02	0.01	-0.19	0.11	-0.05	-2.57	-3.56	-8.01	-14.04
IRTS services with multinationals	Water Transport	0.02	0.04	0.00	0.01	0.12	0.07	-0.09	-0.20	0.01	0.32	-4.77	-8.80
	Air Transport	0.09	0.17	0.09	0.18	0.32	0.63	0.33	0.67	0.84	7.05	-0.25	4.76
	Communications	0.00	-0.01	-0.04	-0.08	-0.06	-0.34	-0.39	-1.04	-1.62	-2.57	-8.05	-14.90
	Finance	0.08	0.10	0.05	0.07	-0.01	-0.13	-0.24	-0.61	-1.14	-1.63	-7.37	-13.62
	Insurance	0.03	0.04	0.02	0.02	0.17	0.27	0.18	0.24	-0.93	-0.58	-6.96	-12.31
	Business services	0.01	-0.03	-0.02	-0.07	0.11	0.06	-0.17	-0.51	-0.21	0.03	-8.53	-15.89
Aggre-gates	Total manufacturing	-0.02	-0.01	-0.04	-0.03	-0.20	-0.14	-0.35	-0.34	-33.86	-30.97	-56.48	-65.10
	Total services	0.01	0.00	-0.01	-0.02	0.10	-0.01	0.11	-0.07	-0.41	0.45	-4.55	-7.66
	Total	-0.01	0.00	-0.04	-0.04	-0.16	-0.10	-0.30	-0.32	-25.77	-22.56	-45.05	-52.74